REMARKS

Applicant thanks the Examiner for careful consideration of the present invention.

The Examiner objected to claim 1, stating that the term "(LAR)" should be "LSR". Applicant has amended claim 1 to replace "LAR" with "LSR" in accordance with the Examiner's suggestion. No new matter has been introduced by way of the amendment. Applicant respectfully requests the Examiner to withdraw the objection.

Applicant has amended claim 2 to replace "label splicing message" with "label splice message", which is consistent with the specification. No new matter has been introduced by way of the amendment.

Applicant has added new claim 14 to recite that the label splice message contains a message identifier and the address of a node which originates the label splice message, and the generating step of claim 2 generates the splice acknowledgement message having the message identifier and the address contained in the corresponding label splice message. Applicant has added new claim 15 to recite that the method of claim 14 further includes the step of distinguishing a latest splice acknowledgement message from a previous splice acknowledgement message based on each message identifier. Support for new claims 14 and 15 can be found on page 13, lines 20-27 and page 17, lines 23-30. No new matter has been introduced by way of the amendment.

Applicant has added new claim 16, which contains the process for preventing routing loops from forming when grafting a subtree to a MPLS tree as defined in claim 1. Support for new claim 16 can be found on page 12, lines 4-19, and page 15, lines 19-25. No new matter has been introduced by way of the amendment.

Applicant has added new claim 17 to recite that the splicing step of claim 16 includes the step of sending said label mapping when splicing a node of the subtree with an MPLS point to multipoint tree (p2mp). Applicant has added new claim 18 that the splicing step of claim 16 includes the step of accepting the label mapping when splicing a node of the subtree with an MPLS multipoint to point tree (mp2p). Support for new claims 17-18 can be found on page 12, lines 12-14. No new matter has been introduced by way of the amendment.

Applicant has added new claim 19, which corresponds to new claim 14 and depends on new claim 16. Applicant has added new claim 20, which corresponds to new claim 15 and depends on new claim 19. No new matter has been introduced by way of the amendment.

The Examiner rejected claims 2-8 and 11-13 under 35 U.S.C. 102(e) as being anticipated by Armitage et al. (U.S. Patent No. 6,374,303), hereinafter referred to as Armitage. The Examiner rejected claims 9-10 under 35 U.S.C. 103(a) as being unpatentable over Armitage in view of Anderson et al. (U.S. Patent No. 6,236,657), hereinafter referred to as Anderson.

The rejections are respectfully traversed for the reason as set out below. Claim 2 is an independent claim. Claims 3-13 depend on claim 2.

Claim 2 is directed to a method for avoiding routing loops from forming when a node of a subtree is grafted to a MPLS tree. As defined in claim 2, a label splicing message and a splice acknowledge message are used to graft the subtree to the MPLS tree without causing routing loops. When a label switching router LSR is to be attached to a MPLS tree, the label switched path to the root of the MPLS tree is verified to be loop free before splicing label switched paths (on page 11, lines 25-28). The node (Rx) of a subtree, which decides to attach to the MPLS tree, sends a label splice message Lsm (on page 12, lines 22-23). When the label splice message is reached at the root node, the root node returns a splice acknowledgement message ACK on the same labelled path (on page 12, lines 9-12). If 1) the splice acknowledgement message returns to the node, and 2) the node is not waiting for a previous splice acknowledgement message, it is declared that grafting the subtree to the MPLS tree does not cause routing loops. As described on page 16, lines 2-3, the mechanism of the present invention separates the loop-free verification from the path setup process.

Armitage discloses method of negotiating a label between neighboring Label Switched Routers (LSRs) (on col. 2, lines 26-29). To establish and maintain a neighbor relationship, a local LSR sends a notification message 10 to a routing neighbor (on col. 2, lines 45-50, and Figure 2). After the process for the establishment (discovery) and maintenance, the process for setting up a label switch path is performed (Figure 1). Figure 3, col. 2, lines 63-col. 3, line 14 and col. 9, lines 5-col. 11, line 58 of Armitage discloses requesting a label binding 14 and creating a label binding 15. Figure 4 and col. 3, lines

17-33 of Armitage discloses receiving a label bind request 17 and sending a label bind 18.

The Examiner stated that Armitage discloses the step of: b) if a label mapping request for the same FEC was not previously received at said node, sending a label splicing message (Lsm) towards the root of said MPLS tree along a labelled path (on Figure 4, col. 3, lines 17-33 and col. 9, lines 58-61 of Armitage). The Examiner further stated that Armitage discloses the step of: c) generating a splice acknowledgement message (ACK) by said root node in response to said Lsm (on col. 9, lines 58-61 of Armitage).

However, Armitage merely discloses on col. 2, line 66-33 that a label bind request and a label bind message are exchanged between neighbors. There is no suggestion in Armitage that such a label bind request is sent and forwarded to a root node, and an acknowledgement for the label bind request is sent back from the root node to the node. Further, Arimitage neither discloses nor suggests the concept of separating the loop-free verification from the path setup process as defined in the present invention.

The Examiner stated that Armitage discloses the step of: d) declaring loop-free and accepting said binding if said node is not waiting for a previous ACK corresponding to a previously received Lsm and said ACK returns to said node on the same said labelled path (on col. 1, lines 31-35 and col. 2, lines 45-54 of Armitage). The Examiner further stated that Armitage discloses the step of: e) informing all member nodes said subtree was grafted to said MPLS tree (on col. 2, lines 45-54 of Armitage).

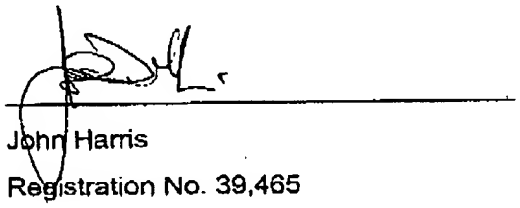
Col. 2, lines 45-54 of Armitage discloses exchanging the notification message 10. As described above, exchanging the notification message 10 is done before exchanging the label bind request and the label bind message, which the Examiner has considered as the steps b)-c) of claim 2. Accordingly, the process for the notification message 10 is not corresponding to the steps d)-e) of claim 2. The process of Armitage is quite different from that of the present invention.

Anderson discloses a process for setting up point-to-multipoint and multipoint-to-point connections. However, Anderson neither discloses nor suggests avoiding routing loops using a label splicing message and a splice acknowledgement message as defined in claim 2. Anderson does not add any teachings to Armitage to render claims 9 and 10 unpatentable.

Hence it is respectfully submitted claim 2 and its dependent claims 3-13 are new and unobvious in view of the cited references. Applicant respectfully requests the Examiner to withdraw the rejections.

In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, early reconsideration and allowance of the application is respectfully requested.

Respectfully Submitted,



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